

TOWARD GREATER COOPERATION?

FM 100-5 AND AFDD 1

**A MONOGRAPH
BY
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SECOND TERM AY 96-97

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19971107 021

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 22 May 1997		3. REPORT TYPE AND DATES COVERED MONOGRAPH	
4. TITLE AND SUBTITLE TOWARD GREATER COOPERATION? FM 100-5 AND AFDD 1				5. FUNDING NUMBERS	
6. AUTHOR(S) MAJ PAUL J. MONTGOMERY, USAF					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School of Advanced Military Studies Command and General Staff College Fort Leavenworth, Kansas 66027				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Command and General Staff College Fort Leavenworth, Kansas 66027				10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) SEE ATTACHED This monograph compares 1997 draft edition FM 100-5, <i>Operations</i> and 1997 2 nd draft edition AFDD 1, <i>Air Force Basic Doctrine</i> to determine if they are complementary with respect to technological superiority, information dominance, and asymmetric force application. Both the Army and the Air Force are anticipating a revolution in military affairs made possible by information collection, processing, storage, and dissemination technologies, in conjunction with precision employment technologies. The monograph concludes that the Army and Air Force doctrine is complementary and that the Army and Air Force have the same understanding of technology superiority, information dominance and asymmetric force application. Differences in emphasis on the importance of these concepts is attributable to the environments in which the Army and Air Force operate. The Army views technology as an enabling factor for military operations while the Air Force views technology as the driving factor for military capability. Both services understand that information dominance as both an objective and a condition and both services see asymmetric engagement as the dissimilar relationship in capability between the object attacked and the attacker. However, the Air Force sees asymmetrical engagement as the primary strength of air power while the Army maintains that asymmetry is an effect that is achieved depending on how a commander employs his operating systems.					
14. SUBJECT TERMS DOCTRINE FM 100-5 AFDD 1 PLANS AND OPERATIONS				15. NUMBER OF PAGES 50	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UNLIMITED		

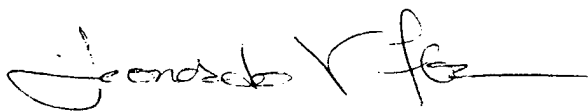
SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

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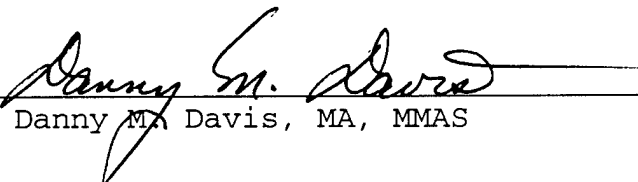
Title of Monograph: *Toward Greater Cooperation? FM 100-5 and
AFDD 1*

Approved by:



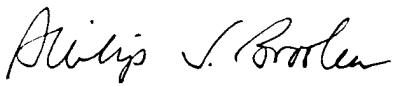
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Second Term AY 96-97

Approved for Public Release: Distribution is Unlimited

ABSTRACT

TOWARD GREATER COOPERATION? FM 100-5 AND AFDD 1 by Major Paul J. Montgomery, USAF, 56 pages.

This monograph compares 1997 draft edition FM 100-5, *Operations* and 1997 2nd draft edition AFDD 1, *Air Force Basic Doctrine* to determine if they are complementary with respect to technological superiority, information dominance, and asymmetric force application. Both the Army and the Air Force are anticipating a revolution in military affairs made possible by information collection, processing, storage, and dissemination technologies, in conjunction with precision employment technologies.

The monograph first examines the purpose of doctrine within each service, the history of doctrine development since WW II, and each service's conceptualization of the environment of conflict. Next it contrasts each document with respect to technological superiority, information dominance, and asymmetric force application.

The monograph concludes that the Army and Air Force doctrine is complementary and that the Army and Air Force have the same understanding of technology superiority, information dominance and asymmetric force application. Differences in emphasis on the importance of these concepts is attributable to the environments in which the Army and Air Force operate. The Army views technology as an enabling factor for military operations while the Air Force views technology as the driving factor for military capability. Both services understand that information dominance as both an objective and a condition and both services see asymmetric engagement as the dissimilar relationship in capability between the object attacked and the attacker. However, the Air Force sees asymmetrical engagement as the primary strength of air power while the Army maintains that asymmetry is an effect that is achieved depending on how a commander employs his operating systems.

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I. INTRODUCTION

The U.S. Army and the U.S. Air Force are inextricably linked in their responsibilities to defend U.S. national security and national interests. Yet despite the complementary nature of air and land forces, each service asserts its primacy in the conduct of war. The Army states "Only the Army can dominate land, its populace and other resources,"¹ while the Air Force counters "It is now clear that aerospace power is the dominant and decisive element of combat in modern warfare."² In spite of these and similar statements, each service depends on the other. Field Marshall Viscount William Joseph Slim, while reflecting on the Southeast Asia campaign in WW II, summed up the relationship between land and air forces best when he wrote:

There is one other thing about combined land and air operations—and all operations on land are that. The land and air commanders responsible at each level must not only be in close touch, they should live together as we did. Ours was a joint land and air war; its result, as much a victory for the air forces as for the army.³

This sentiment holds for today's Army and Air Force and will extend into the foreseeable future. The symbiotic relationship between the Army and the Air Force requires compatible basic doctrine and a common understanding of the future.

It is the future that the Army and the Air Force are anticipating in their respective basic doctrine. Both periodically update doctrine to accommodate new developments in organization and technology as well as changes in the fundamental national security position of the United States. The military build up

of U.S. forces in the 1980s provided untested advancements in military technology that had the capability to change the basic employment doctrine of U.S. forces. These technological innovations were demonstrated by the U.S. military during Operation DESERT STORM in 1991. The dramatic and rapid military operations by the U.S. led coalition forced a reevaluation of both Army and Air Force doctrine following the war. The result was the 1993 edition of FM 100-5, *Operations*, and the 1992 edition of AFM 1-1, *Basic Aerospace Doctrine*.⁴

Background

Superior technical means, asymmetric and precision force application, and information superiority were keys to success for the U.S. led coalition in Southwest Asia. Since this victory in the Persian Gulf, military intellectuals have validated the military strategy of technological superiority, information dominance and asymmetric force application for U.S. armed forces. In fact, many observers believe there is a revolution in military affairs taking place based on technological advances in information collection, storage, processing and dissemination systems, and on technological advances in precision engagement capability.⁵ These concepts are incorporated in draft FM 100-5 and AFDD 1 (the replacement document for AFM 1-1) .

The Army has designated Field Manual 100-5 its capstone operational doctrine since 1905⁶, while the Air Force has only designated AF Manual 1-1 as its basic operational doctrine since 1964.⁷ Both services will release new versions of each of these manuals within the year. FM 100-5 is an update and

departure from the 1993 manual which first introduced peace operations in basic doctrine. The Air Force is likewise updating its 1992 basic operational doctrine. It will have a new designation, however. Instead of AFM 1-1, the new manual is Air Force Doctrine Document 1 (AFDD 1). It incorporates concepts from the 1990 Secretary of the Air Force White Paper entitled *Global Reach, Global Power*.⁸

Reflecting on the dramatic technological advances created in the 1980s and proven in Southwest Asia in 1991, the Army, through *Army Focus 94, Force XXI*, emphasized the power of "digitization", the ability to use microcircuit and signal processing technology to enhance command and control and intelligence dissemination on the future battlefield. Enhanced situational awareness of the battlefield provides a quantum leap in the tempo of military operations. This, combined with increased precision and lethality of weapon systems is the goal of battlefield digitization and is made possible by leveraging advanced military and information technologies on current and programmed acquisitions. Adapting advanced technologies allows the Army to "revolutionize future battlefields in five key areas: lethality and dispersion; volume and precision of fire; integrative technology; mass and effects; and invisibility and delectability."⁹

Coupled to the high technology theme of Force XXI is the reality that the Army must be a power projection force requiring strategic agility and mobility. Continuous forward deployment of US forces in theater is perceived to be a thing of the past. Mobility for power projection for the Army of the 21st century is a joint venture with the Navy, Air Force, and commercial industry.¹⁰ This

requirement for global mobility is one of the links that ties Army doctrine to other service doctrine. Other links include joint use of sensors, command and control architectures, simultaneous and reinforcing firepower, and information operations.¹¹ The increased reliance by all services on joint systems and capabilities makes necessary complementary service doctrine.

The Air Force previewed its vision of the future in a pamphlet entitled *Global Presence 1995*. The thrust of this pamphlet was to emphasize the Air Force's ability to project military power from the United States to all points on the globe. As an analogy, the US Cold War strategy of forward presence is likened to the "cop on the beat", providing physical presence and always at the scene of potential criminal activity, ready to respond should a crime be committed. The future strategy of power projection requires a different analogy. It likens the United States' space based and airborne warning network to video monitoring and alarm systems that negate the need for physical presence until a crisis actually happens.

Global Presence 1995 asserts that while all military forces can exert presence, the unique attributes of each type of force effects the scope and quality of that presence. It emphasizes that military systems provide presence by capability rather than by footprint. In addition, it states that technological advances are enhancing the contributions of all military forces to exert presence in a region of concern without increasing the number of personnel or facilities forward deployed. Clearly meant to portray Air Force strengths in securing US national interests, the pamphlet advocates tailoring force packages to meet a

theater commander's presence mission based on five principles of war: responsiveness, persistence, flexibility, survivability and economy. In light of these principles, the Air Force maintains that technological advances have improved the United States' ability to exert influence with less political and military risk because of 1) enhanced situational awareness provided by information technologies, 2) strategic agility afforded by improvements in transport technologies, and 3) increased lethality provided by precision guided munitions.¹²

Publications such as *Army Focus 94*, *Force XXI* and *Global Presence 1995* illustrate the technological direction and mission orientation the two services intend to enhance and develop further, and provide a backdrop to the doctrinal changes each service intends to incorporate into its basic operational manuals. A linking document for both the Army and the Air Force is *Joint Vision 2010*. It too emphasizes the necessity of information superiority, precision munitions and technological superiority through its focus on dominant maneuver, precision engagement, full dimensional protection and focused logistics. It asserts that future battle will be accomplished with greater lethality using fewer assets because of enhanced situational awareness provided by information technology.¹³ The vision of the future provided by the Chairman of the Joint Chiefs of Staff is the guide by which the services can map their future. Each advancement toward achieving this vision makes necessary an evaluation of each service's basic doctrine.

Thesis and Evaluation Criteria

Service doctrine is the blueprint for the military operations its forces expect to execute. It provides insight into the conduct of future operations and the way military forces can expect to be employed in future conflict.¹⁴ Both the Army and Air Force conduct operations on and over land—on most occasions simultaneously. To insure unity of effort between the services, the proposed Army and Air Force doctrine should be complementary. Coordinating draft FM 100-5 and draft AFDD 1 are complementary with respect to technological superiority, information dominance, and asymmetric force application.

Both doctrinal manuals rely on leveraging superior technologies to process information more rapidly than an adversary in order to apply the appropriate military force before an adversary can react to the current situation. The intent is to concentrate the effects of military power at decisive points, whether those effects are information, presence, or firepower. The premise for successful employment of military force in each manual mirrors the classic military theories of war credited to Clausewitz and Jomini. Clausewitz admonished practitioners of warfare to strike at the center of gravity. "It is against these that our energies should be directed. If the enemy is thrown off balance, he must be given no time to recover."¹⁵ Jomini similarly advocated four maxims for success in war:

1. Throw the mass of an army upon the decisive points in a theater of war.
2. Engage fractions of the enemy with the bulk of one's forces.
3. Mass on the decisive point.

4. Engage on the decisive point at the proper times and with ample energy.¹⁶

These two theorists' themes are carried forth in both draft manuals.

This paper examines three elements within Army and Air Force doctrine—technology, information dominance, and asymmetric engagement to discern differences in approach to military operations and to determine compatibility between the approaches. Three things are evident upon examination of the proposed doctrine. First, the Army views technology as an enabling factor for military operations while the Air Force views technology as the driving factor for military capability. Second, both services see information dominance as both an objective and a condition. Third, both services see asymmetric engagement as the dissimilar relationship in capability between the object attacked and the attacker. However, the Air Force sees asymmetrical engagement as the primary strength of air power while the Army maintains that asymmetry is an effect that is achieved depending on how a commander employs his operating systems.

A foundation of relevant and informative doctrine is critical to the maintenance of the military capability of the United States. Each service writes its doctrine based on the primary missions assigned by US Code Title X and its operating medium. In addition, the Chairman of the Joint Chiefs of Staff provides collective vision for all services on the trends that will fulfill the nation's future defense needs. Since the collective military must rely on each service

component for support, it is critical that the doctrines complement and reinforce each other.

Both draft FM 100-5 and draft AFDD 1 are near final approval and publication. Both publications attempt to bridge current operational routines with the future vision of conflict. Both grapple with implications of a revolution in military affairs enabled by information technologies, information dominance, and asymmetric force application. To work together coherently, both documents must promote a common understanding of the purpose of doctrine, the impact of technological advancements with respect to information systems, the meaning and purpose of information dominance, and both documents should express a common understanding of asymmetric force application. The Army and the Air Force have overlapping capability to effect operations on land. Complementary and reinforcing doctrine is essential to assure economical and practical application of that capability.

II. METHODOLOGY

Compatible operational doctrine requires a common understanding of doctrine's role in a military organization, a common understanding of the environment of conflict, and a common understanding of the vital components that contribute to a revolution in military affairs. This paper will contrast the Army's and the Air Force's proposed basic operational doctrine with respect to

technological superiority, information dominance, and asymmetric force application to determine whether the Army and the Air Force have a similar view of future conflicts, and whether each service's doctrine complements the other service.

Three questions will be answered to determine whether Army and Air Force doctrine are complementary. First, does doctrine mean the same thing to the Army and the Air Force. Second, should Army and Air Force doctrine be complementary. Finally, how does each service understand the concepts of technological superiority, information dominance, and asymmetric force application. Both documents promote a common understanding of the purpose of doctrine, the impact of technology and information systems on the conduct of future operations, the meaning and purpose of information dominance, and the value of asymmetric force application. Although structurally dissimilar, it is possible to derive direct correlation between these concepts in draft FM 100-5 and AFDD 1.

The Purpose of Doctrine

The Army and the Air Force share a common understanding of what doctrine is, its purpose, and its application. Draft FM 100-5 describes doctrine as "descriptive and prescriptive guidance by which military forces guide their actions in support of national objectives; it is a guide for action to be applied with judgment."¹⁷ The 1993 FM 100-5 defines operational doctrine as "the statement of how America's Army, as part of a joint team, intends to conduct war and

operations other than war. It is the condensed expression of the Army's fundamental approach to fighting...[that is]...definitive enough to guide specific operations, yet adaptable enough to address diverse and varied situations worldwide."¹⁸ The 1997 definition specifically links judgment to how doctrine is applied.

Draft AFDD-1 describes doctrine as "the fundamental principles by which military forces guide their actions in support of national objectives...the linchpin of successful military operations...meant to illuminate the judgment of airmen and govern the way we prepare for, plan and conduct air and space warfare."¹⁹ There is a change in emphasis in the definition of doctrine compared to the March 1992 version of AFM 1-1. In it, doctrine "is a guide for the exercise of professional judgment rather than a set of rules to be followed blindly."²⁰ Draft AFDD 1's definition of doctrine links aerospace doctrine to military doctrine. Aerospace doctrine is only unique to the medium in which the Air Force operates. It retains the importance of judgment which aligns the Air Force definition with the Army's definition.

The importance of the two definitions in the draft doctrinal manuals is the emphasis on the part of both the Army and the Air Force on judgment. This emphasis implies that the both services are gravely aware of the uncertainty and uniqueness of future military conflict. It shows an awareness that technological change and the perceived revolution in military affairs will place an increased burden on soldiers and airmen to maintain flexible minds in the application of military power. It also cautions soldiers and airmen to make decisions within the

constructs of enduring principles of war and the basic framework of service doctrine.

Army and Air Force Doctrine Since WW II

Service doctrine is effected by the strategic landscape, national security strategy, and service history. The interaction of Army and Air Force doctrine has been cyclical, responding to changes in international threats and national security strategy. Considering the synergy of air and ground power in WW II, it seems natural that doctrine between the Army and Air Force would enjoy a history of being complementary. However, this is not the case. Post WW II national security strategy and defense reorganization began a rift between the two services. Divergent visions of warfare and competition for Department of Defense dollars caused interservice competition. This competition limited the interaction between the Army and Air Force and institutionalized doctrinal differences. Not until the advent of AirLand Battle Doctrine of the 1980s and passage of the 1986 Goldwater-Nichols Department of Defense Reorganization Act was the synergy enjoyed in WW II reestablished.²¹

WW II

In 1943, the Army approved and published FM 100-20, *Command and Employment of Air Power*, which stated that land power and air power were coequal.²² This statement led to the establishment of U.S. Strategic Air Forces in the Europe and the Pacific theaters under the direction of General Carl A.

Spaatz, USAAF. It was one of several factors leading to the establishment of an independent Air Force after WW II.²³ FM 100-20 effectively established two air forces within the Army Air Force since an earlier doctrinal manual, FM 31-35, *Air-Ground Operations* (1942), prescribed the employment of air forces in support of ground operations. Taken together, these manuals differentiated Army Air Force operations between strategic air operations and tactical air operations in support of the field army. This separation in control of strategic and tactical assets sparked the primary doctrinal dispute within the Air Force after WW II.²⁴ However, the arrangement worked in WW II and nurtured the development of strategic employment concepts as well as tactical doctrine.

Post WW II

The National Security Act of 1947 created the National Military Establishment under the Secretary of Defense, but rather than unifying the armed services as advocated by the Department of War, it separated them into three departments, the Department of the Army, the Department of the Navy and the Department of the Air Force. This Balkanization of the U.S. Armed Forces ran counter to the trend for an integrated defense structure advocated by the Army and the Army Air Force immediately after WW II.²⁵ However, since the 1947 Act, tension has existed between Army and Air Force doctrine. This tension occurs primarily because of how each service perceives itself fitting into national security strategy.

The post WW II national strategy to rely on atomic weapons for strategic defense caused a rift between the Army and the Air Force as well a rift within the Air Force itself. The initial dispute within the Air Force was over the structure and command relationships of theater, or tactical level air forces, and strategic air forces. The differentiation between strategic and tactical air forces was not in accordance with air power theories advocated by the doctrine division at Air University, Maxwell AFB, AL. Air University's position was that the Air Force should adopt the term theater air forces to insure centralized control of air assets under an air component commander. This position was eventually adopted in Air Force doctrine.²⁶

The post WW II Army focused on its role as an occupation force while at the same time attempting to organize to fight a continental war against the Soviet Union. In essence, re-fighting a WW II style theater level campaign. Fiscal constraints engendered by reliance on atomic weapons for national defense during the Eisenhower Administration conspired against the Army's strategy and forced cuts force structure.²⁷ Theater level warfare, in which the Army was preeminent, was replaced by deterrence strategy based on massive retaliation. The service that could most effectively bring nuclear weapons to bear gained preeminence in U.S. national security strategy. The Air Force, through long range strategic bombers, quickly moved to fill this role.

Massive Retaliation

In 1955 the Air Force released its first basic doctrinal statement, AFM 1-2, *United States Air Force Basic Doctrine*, emphasizing "air forces must be responsive at all levels of operation to employment as a single, aggregate instrument."²⁸ This statement sealed the fissure over strategic and tactical air forces within the Air Force. No longer would theater forces be considered auxiliary forces of the field army. Rather, Air Force doctrine prescribed that the theater air forces should be controlled by a centralized air component commander. As far as joint operations were concerned, the Air Force position was that "when forces of two or more services are combined in a specific undertaking, that component whose forces are the most capable of conducting decisive operations must have the primary role."²⁹ Under the policy of massive retaliation, this statement can be viewed as a declaration of Air Force preeminence over each of the other services.

During the same period, the Army was forced into reorganizing itself to contend with a new mission of maintaining civil order in the event of nuclear war. This was not a mission the Army was willing to accept as its reason for existence according to General Maxwell D. Taylor, Army Chief of Staff, 1955-1959. If the battlefield of the future was to be littered with tactical nuclear weapons, then the Army's watchwords would become, dispersion, flexibility and mobility.³⁰ These concepts were integrated into the 1956 and 1961 versions of FM 100-5, which were the vehicles through which the Army would reorganize into a Pentomic Army. The Pentomic Army was never fully realized. With the advent of the

national security strategy of Flexible Response under the Kennedy Administration, the Army began reorganizing and refitting to meet a central European threat against the Soviet Union.³¹

Flexible Response

During the 1960s, the Air Force changed the designation of AFM 1-2 to AFM 1-1, *United States Air Force Basic Doctrine*, but maintained AFM 1-1 in a similar form to its 1956 predecessor. The one significant change in the 1964 update was that the Air Force now recognized a much broader range of warfare in accordance with the national security strategy of Flexible Response. It had separate chapters on aerospace employment in general war, tactical nuclear operations, conventional air operations, and insurgency operations. While maintaining its premise of centralized control of aerospace assets, it granted that aerospace forces were a part of the national military structure maintained to support national objectives of which strategic deterrence and retaliation were only components.³²

Viet Nam

As the U.S. military became heavily involved in Viet Nam, the development of basic doctrine in the Army and the Air Force was essentially fixed with relation to each other. The interaction and synergy between the two services was maintained at a respectable doctrinal distance though tactical operations were coordinated. The Air Force fought the Viet Nam War without

centralized direction from a centralized air component commander, contrary to its doctrine.³³ The Army was similarly hamstrung. Organized to fight a mechanized war in Europe, it lacked sufficient numbers of experienced infantry to fight an effective jungle campaign. It was also hampered by the same political constraints experienced by the Air Force and was not permitted to fight according to its basic doctrine.³⁴

Post Viet Nam

The withdrawal of U.S. forces from Viet Nam in 1973, and the sense of defeat experienced by the U.S. Armed Forces after that conflict, demoralized both the Army and the Air Force. The Air Force in 1975 released a new version of AFM 1-1 that emphasized operational capabilities of deterrence, persuasion, and coercion; no longer defining itself by target destruction capability.³⁵ The Army turned introspective and completely reevaluated FM 100-5 in light of the military technological advancements proven in the 1973 Arab-Israeli War. The result was the 1976 edition of FM 100-5, the "DuPuy Manual".³⁶

The 1976 FM 100-5 focused Army doctrine again on fighting the Soviet Union in Europe. It called for an "active defense," where the defending army would engage a numerical superior enemy force with armor, anti-armor, and tactical air "with emphasis on weapons systems analysis and force ratios."³⁷ This appreciation of air power was a coordinated effort between General William E. DuPuy, commander of the Army Training and Doctrine Command (TRADOC), and General Robert J. Dixon, commander Air Force Tactical Air Command

(TAC). General DuPuy and General Dixon were facing the same dilemma on how to deal with a Soviet threat in Europe. Their vexing problem was how to defeat an enemy who had apparent equivalence in systems capability and overwhelming numbers of those systems. To investigate the expected synergism of employing Army and Air Force systems cooperatively, TRADOC and TAC set up a joint air land forces applications directorate (ALFA). It became the nucleus for coordinating and implementing what would become known as AirLand Battle Doctrine.³⁸

AirLand Battle Doctrine

The 1982 edition of FM 100-5 initiated AirLand Battle Doctrine, and gave intellectual rigor to active defense. Focusing on maneuver and disruptive deep fires, it was operational in context and required coordination with the Air Force to implement.³⁹ Its publication caused debate and consternation within the Air Force. A new doctrinal mission was introduced, battlefield air interdiction (BAI), which many within the Air Force believed was air interdiction controlled by the Army. The concept was strongly opposed by proponents of centralized control of air assets since BAI could potentially dilute an air interdiction campaign, a primary Air Force mission. The controversy culminated with a joint Army-Air Force Memorandum of Agreement which pledged each service to annually review and update a list of 31 joint initiatives of mutual interest in implementing AirLand Battle.⁴⁰

By 1986, theater air forces and theater army forces had complementary doctrine for fighting a continental war in Europe. The 1986 FM 100-5 clarified working relationships with the Air Force, but was otherwise similar to its 1982 predecessor.⁴¹ The 1984 AFM 1-1 reiterated that air power was most effectively employed when air assets were centrally controlled and decentrally executed and emphasized the continued need for unity of air power command in theater warfare.⁴² However, 1986 was also the year of the Department of Defense Reorganization Act which provided much greater autonomy to theater commanders in how they employed forces assigned to their area of operations. Service doctrine became a blueprint for employment, but command relationships within a theater became the prerogative of the theater commander, not service doctrine. The allegation that BAI was Army controlled interdiction lost its sting within the Air Force since employment of theater assigned assets was the purview of the theater combatant commander.

The Persian Gulf War

Because of changes engendered by the 1986 Department of Defense Reorganization Act, the synergistic relationship between land and air forces carried through the 1991 Persian Gulf War. In most ways, the Persian Gulf War was fought in accordance with AirLand Battle Doctrine. The Air Force finally tried and proved the concept of centralized control of air assets through the Joint Forces Air Component Commander, validating a central and enduring tenet of its doctrine. The Army also validated its doctrine, in particular its emphasis on

quality training, rehearsal, rapid movement, and professionally competent forces.⁴³

Following the Gulf War, the Air Force released its 1992 AFM 1-1. It was different in many ways to previous editions. First, it was published in two volumes. Volume 1 contained the roles, missions and functions of the Air Force along with the tenets of aerospace power. Volume 2 was a collection of essays on war and the employment of aerospace forces in war. This format explained the Air Force's view of itself in national security, posited principles for employing aerospace forces, but refrained from dictating to theater commanders how to use Air Force assets.

The air component commander's exercise of operational art involves four tasks. The first is envisioning the theater and determining when and where to apply what force in concert with the combatant commander. The next is creating conditions that give units applying force the best chance of success. The third is directing adjustments to operations in accordance with mission results and the operational commander's revised intent. The final is exploiting the often fleeting opportunities that result from combat. In each task, the key to success lies in an air component commander's ability to achieve objectives by orchestrating aerospace roles and missions so they produce mutually reinforcing effect.⁴⁴

This statement emphasizes the subordination of Air Force doctrine of centralized command to combatant commander discretion. Similarly, the 1993 FM 100-5 recognized the change in organization of theater operations caused by the 1986 Department of Defense Reorganization Act. Stated in the preface:

The 1993 doctrine reflects Army thinking in a new, strategic era. This doctrine recognizes that the Cold War has ended and the nature of the threat, hence the strategy of the United States as well, has changed. This doctrine reflect the shift to stronger joint operations, prompted by the *Goldwater-Nichols Act of 1986*. This doctrine considers the high quality of Army leaders and soldiers. It causes AirLand Battle to evolve into a

variety of choices for a battlefield framework and a wider interservice arena, allows for the increasing incidence of combined operations, recognizes that the Army forces operate across the range of military operations. It is truly doctrine for the full dimensions of the battlefield in a force-projection environment.⁴⁵

In each case, service doctrine provides a guide and a framework for employing forces by the theater commander.

Today, service doctrine of the Army and the Air Force has come full circle. As shown, doctrine follows the defense architecture of the period for which it is written. WW II was fought by the Army and Army Air Forces with compatible doctrine and harmonious disagreements about its application. The conflicts in Korea and Viet Nam were fought when Army and Air Force doctrine was not harmonized. The U.S. success in leading a coalition in the 1991 Persian Gulf War can be attributed to complementary doctrine embodied in AirLand Battle and the service agreements that implement the concepts inherent to that doctrine. Current doctrine, as a direct result of the Goldwater-Nichols Act, emphasizes the operational employment of military forces first, and service unique aspects second. Increased range, precision and lethality of each service's weapons systems, coupled with increasingly intermixed operations on land and in the air, requires complementary doctrine between the Army and the Air Force similar to that accomplished by AirLand Battle Doctrine.

Conflict Environment

Both the Army and the Air Force use their basic operational doctrine to define a vision of the future. Draft FM 100-5 describes the domain of today's

conflict environment as one of radical and violent change. Contentious issues are multifaceted and are likely to involve multiple parties. In fact, "rarely are only two sides involved in modern conflicts."⁴⁶ Conflict transcends interstate warfare and is likely to involve all elements of political power in addition to military force. There are many causes for today's environment of international conflict. Among those specifically mentioned are "state fragmentation; struggles for resources; nationalist, tribal, and ethnic motivations; expanding populations and urbanization; and the proliferation of weapons of mass destruction."⁴⁷ Where U.S. vital interests are at stake, U.S. armed forces can expect to participate in some method of conflict resolution. Means for resolution may involve the threat or application of force (war), or stability and support operations to mitigate the causes of conflict.⁴⁸ Through this entire spectrum, the Army intends to provide the doctrine, capability and means to support national security strategy.

Draft AFDD 1 portrays a similar environment of modern conflict as that in draft FM 100-5. Acknowledging that the social and political structure of the world has altered since the dissolution of the Soviet Union, AFDD 1 describes the environment of conflict through "multiple risks: economic and political transitions, repressive regimes, the spread of weapons of mass destruction, violent extremists, militant nationalism, ethnic and regional conflict, refugee overflows, narcotics trafficking, environmental degradation, rapid population growth, and terrorism."⁴⁹ In effect, armed forces are required for risk management. Draft AFDD 1 justifies the existence of the U.S. Armed Forces by their ability to minimize the threat posed by these risks. Given this backdrop, the

Air Force intends to help accomplish the task of risk management through a variety of means in the physical as well as the informational environment.

Contrasting Visions

The Army conceptualizes the environment of conflict in three domains: the physical, the informational and the moral. The physical domain is the material and geographic elements within the domain of conflict. The informational domain is the “structures, systems, procedures, and products influencing a force’s acquisition, use, protection, exploitation, denial and management of information.” The moral domain is “the realm of human thought, belief, and emotion.” By the nature of each domain, they are each dependent and interrelated to the others.⁵⁰ In addition to three domains of conflict, there are also three levels of conflict: the tactical, the operational and the strategic levels. The tactical level is where engagements, battles or stability operations are conducted to accomplish a specific task. The operational level is where tactical operations are linked to achieve strategic goals. The strategic level is where nations and other political actors direct military operations and other elements of political power, to advance their own interests. By defining the conflict environment, and the domains of conflict, draft FM 100-5 provides context why the American public needs the U.S. Armed Forces.

Like the Army, the Air Force visualizes itself employed in all operations in support of national security strategy. It also recognizes three levels of war—tactical, operational and strategic—with similar defining characteristics as those

in draft FM 100-5. However, the Air Force posits a different view of the conflict environment. The extremes in this environment are combat and noncombat. Draft AFDD 1 proposes that warfare, or combat, is normally associated with different environments of air, land, sea, space and information. It categorizes war by intensity, duration, by means and by objectives.⁵¹ It does not define domains of conflict in the manner of draft FM 100-5. The Air Force's role in the conflict environment is the application of air power in either combat or noncombat conditions. In fact, the Air Force categorizes its support for Military Operations Other Than War (MOOTW) as typical combat, typical noncombat, and the group that may be either combat or noncombat. For each MOOTW case, the Air Force prescribes a supporting posture emphasizing that "all air and space missions are adaptable to MOOTW, but there may be limited objectives and special rules of engagement that restrict some operations."⁵²

Implied in the discussion on aerospace power in warfare is Clausewitz' paradoxical trinity⁵³ and the inevitable issue of chance in the conduct of war. Draft AFDD 1 provides three truths that sum up war: 1) War is an instrument of national policy, 2) War is a complex and chaotic human endeavor, 3) War is a clash of opposing wills. As such, the conduct of warfare requires "sound doctrine, leadership, organization, and training" to prosecute it effectively.⁵⁴ The moral domain of conflict, as presented in draft FM 100-5, is described exclusively as the will to prosecute conflict in draft AFDD 1.⁵⁵

Finally, the Air Force does not perceive information as a domain. Information is "Data and instructions that give data meaning."⁵⁶ The information

domain of conflict as presented in draft 100-5 directly correlates to battlespace in draft AFDD 1.⁵⁷ The ability to control what the enemy knows about oneself, while retaining the ability to see the enemy is a tenet of aerospace power in AFDD 1 named simply "information".⁵⁸

In draft FM 100-5, the Army is preparing itself for change based on six patterns of operations. These patterns are based on the tasks armies must perform to be successful and help define future requirements and capabilities. The patterns are: project the force, protect the force, gain information dominance, shape the battlespace, decisive operations, and sustain the force.⁵⁹ In draft AFDD 1, the Air Force complements these patterns of operations with its themes of core competencies: air superiority, space superiority, precision employment, information dominance and global mobility.⁶⁰ Taken together, the patterns of operations and core competencies, provide a framework for planning for the future.

Both draft FM 100-5 and AFDD 1 present a similar view of the nature of conflict today. Each describes international and transnational areas of concern for the near term. Each articulates an acknowledgment that information systems have greater influence on the conduct of operations, though the acknowledgment is expressed differently in each publication. The Air Force views conflict in degrees of combat and noncombat, while the Army takes a more holistic view of the domains of conflict—the physical domain, the moral domain, and the information domain. Both approaches are valid. Each service takes direction from the national security strategy, filters it through its historical

experiences, service culture, and vision of future conflict, and develops its own unique doctrine.

III. DOCTRINE CONTRASTED

Both draft FM 100-5 and draft AFDD 1 will be authoritative guidance for the Army and the Air Force. They will each directly shape future patterns of operations, and indirectly shape force structure and acquisitions. Both anticipate a revolution in military affairs brought on by an explosion in technologies effecting information collection and dissemination and precision guidance. These changes will potentially provide each service with unmatched situational awareness and the ability to mass combat power at the decisive points of any operation. The Army and the Air Force view the inputs to the revolution in military affairs similarly, but interpret the effects with respect to the mediums in which each respective service operates.

Technological Superiority

Technology is "the application of science, especially to industrial or commercial objectives."⁶¹ Technology is integral to modern military operations.

Draft AFDD-1 goes so far as to make it a tenet of aerospace power:

Technology related. Man has been able to fight with their hands or simple implements and to sail on water using wind or muscle power for millennia, but to achieve flight required advanced technology. More than

any other service, the Air Force must rely on technology to keep it on the cutting edge of military capability. The very fact that it is the only Service that is charged by law with developing and maintaining the nation's capability to operate military forces in the hostile environments of air and space against advanced air and space-based defensive weaponry make this evident.⁶²

This tenet is not present in the 1993 AFM 1-1. Perhaps because it is self evident that the ability to employ coordinated air power requires technologically advanced command and control systems, aircraft systems, and support structures. In fact, the ability to launch and operate the constellations of satellites that directly support all military forces, uses the most advanced technologies available today. "Air power depends on the most advanced developments in aerodynamics, electronics, metallurgy, and computer technology."⁶³ Even at its most elemental level, man's ability to fly, air power is the application of science. Without the pursuit of ever more advanced systems and technical means, the Air Force would stagnate and become an impotent force. For this reason, draft AFDD 1 incorporates "Technology related" as a tenet.

Each of the Air Force's tenets (except *Offensive employment, Strategic force, and Persistent*), pays homage to technology. *Flexibility* emphasizes the freedom of surface constraints inherent in aircraft and the ability to approach objectives "from almost infinite directions and altitudes" tacitly acknowledging the technological means to achieve "elevation, speed, range, flexibility, lethality and precision." *Versatility* is enhanced by advanced information systems and precision munitions. *Synergistic* requires the technological means of identifying

key nodes of enemy systems. *Centralized control* requires technically advanced command and control systems. *Concentration* illustrates the ability to mass effects based on technologically advanced precision munitions. And finally, *Information*, another tenet not found in the 1993 edition AFM 1-1, ties advanced communications and signal processing technologies to the ability to wage "information war".⁶⁴ It is technology, in and of itself, that is the core of the corporate Air Force ethos. Technology is the driving force for maintaining air power.

While *Technology Related* is not a tenet or principle espoused in Army operations, the pursuit of advanced technology is a means for soldiers to more effectively perform a wide variety of tasks, and the leveraging of advanced technologies is an underlying theme in draft FM 100-5. This theme, however, does not negate the central feature of the Army—the soldier. Firmly stated in draft FM 100-5 is "Regardless of the importance of equipment or the expansion of technological capabilities, soldiers are more important than machines. Soldiers, not equipment, accomplish missions and win wars. The primacy of the soldier is inextricably linked to operational success."⁶⁵ The effective use of technology by soldiers is paramount in the manual. For example, in the opening discussion on the art of operations, it states:

Predictive modeling, integrative technology, precision guidance systems and other high technology is useful and necessary, but not sufficient. The artistic side of military operations endures: creativity, intuition, leadership, innovation, and decision making under conditions of incomplete information. These will never lose their importance, for they describe the essence of military operations.⁶⁶

The focus remains the ingenuity of man, a vivid reminder that war and conflict resolution are a human endeavors. This emphasis on technology serving soldiers as a means to accomplishing a military mission is further highlighted in the discussion of the physical domain of conflict.

Soldiers are called on to conduct a diverse range of missions, from stability and support operations to war. Soldiers must be exceptionally competent, flexible, and adaptive to adapt to the variety of tasks to which they are responsible. In addition to the varied missions, incorporation of new technologies and operating routines can stress soldiers. Draft FM 100-5 emphasizes this point, stating:

Weapon systems' capabilities change rapidly as well. More effective systems demand greater sophistication for operation and integration into combined arms teams. Their effects introduce new levels of violence to battlefields. The use of these systems requires intelligent, innovative soldiers. Soldiers must also be able to withstand the increased stresses of modern operations, stresses that affect soldiers even in victory.⁶⁷

The assertion of the primacy of the soldier is amplified in TRADOC Pamphlet 525-5, *Force XXI Operations*. It states that "knowledge-based operations call for great change in doctrine, training, leader development, organizations, materials, and soldiers. But throughout these changes, the nature of land combat demands that the Army maintain its soldier focus."⁶⁸

In draft FM 100-5, technology is linked to advances in information storage, processing, retrieval and dissemination systems which are expected to provide enhanced situational awareness and more rapid reaction on future battlefields. This leverage allows greater ability to control the initiative and

tempo of military operations. "With proper management, communications technologies reduce the time between a soldiers' discovery of information and its dissemination to where it best influences actions."⁶⁹ Similarly, greater agility of the fighting force is provided by information technologies:

Digitization and automation increase agility by enabling forces to exchange and analyze critical information quickly. Information technologies enable commanders to determine, decide, act and assess faster and more accurately than opponents. This technology helps them generate and apply force at decisive times and places in a manner opponents cannot match.⁷⁰

Information technologies are vital to the "See" function of the Army's core functions concept (See, Shape, Shield, Strike, Move). Specifically stated is "Commanders must use the full array of information systems to gain and maintain situational understanding throughout an operation."⁷¹ This concept is key for the Force XXI vision. The overarching theme in TRADOC pamphlet 525-5 is the leveraging of information technologies to provide commanders and soldiers the ability to understand the environment of conflict with greater clarity and more rapidly than their opponent. The summation of this thought is:

- (1) First, future information technology will greatly increase the volume, accuracy, and speed of battlefield information available to commanders. Such technology will allow organizations to operate at levels most adversaries cannot match, while simultaneously protecting that capability.
- (2) Second, future technology will require the Army to reassess time-honored means of battle command—to recognize that in the future, military operations will involve the coexistence of both hierarchical and internetted, nonhierarchical processes. Order and decentralized means will result in military units being able to decide and act at a tempo enemies simply cannot match.⁷²

This assessment is incorporated widely in draft FM 100-5.

As portrayed in draft FM 100-5 and AFDD 1, the Army and the Air Force perceive technology differently but with the same effect. The Air Force regards technology as a tenet of air power, vital to retaining itself at the cutting edge of military capability. In effect, the Air Force believes technology drives military capability. The Army, on the other hand, regards technology as “enabling” more efficient and effective military operations consistent with the six patterns of operations.⁷³

Information Dominance

Information dominance is a battlespace⁷⁴ objective and a condition in both Army and Air Force doctrine. It is defined in the Air Force as “the ability to collect, control exploit and defend information while denying an adversary the ability to do the same.”⁷⁵ The Army is more explicit in its definition of information dominance. Rather than explaining only the term, its definition includes important limiting factors:

Information dominance is the degree of information superiority that allows the possessor to use information systems and capabilities to achieve an operational advantage. Absolute and sustained dominance of the expansive information environment is not possible. Commanders seek to achieve information dominance at the right place, the right time, and in the right circumstances. Information dominance creates a disparity between what we know about our battlespace and operations within it—and what the enemy knows.⁷⁶

Where the Air Force definition is succinct, the Army definition provides the insight that information dominance is most often transient and situation dependent.

The concept of information dominance is not considered new by either service—though the term is not used in either the 1992 edition AFM 1-1 or 1993 edition FM 100-5. In the past, information management and dissemination was considered by both services as a subordinate function of intelligence.⁷⁷ Information dominance, however, incorporates numerous mission areas in addition to intelligence collection and dissemination. Each of the draft manuals illuminates these functions.

The Air Force is brief in stating the importance of information dominance. “Whoever has the ability to gather, understand, control, and use information is most likely to achieve victory.”⁷⁸ In draft AFDD 1 there are seven missions specifically designated for establishing the condition of information dominance. These missions are:

Counterinformation (Offensive and Defensive)—creates an environment where friendly forces can conduct operations without suffering substantial losses, while simultaneously denying the enemy the ability to conduct operations

Command and Control—both the process and the system by which the commander decides and monitors mission execution

Intelligence—clear, brief, relevant, and timely analysis of foreign capabilities and intentions for planning and conducting military operations

Surveillance—provides warning of enemy initiatives and threats, and detects changes in enemy activities; generally *not* time sensitive. Includes all the following means: visual, aural, electronic, photographic

Reconnaissance—complimentary mission to surveillance using similar means that is *generally time sensitive*

Navigation and Positioning—provides accurate location and time information support for strategic, operational and tactical use

Weather Service—provides timely and accurate environmental information for strategic, operational and tactical planning

Each of these missions was formerly considered either force enhancement or force support in the 1993 edition AFM 1-1. Draft AFDD 1 drops the concept of roles and missions in favor of the concept of core competencies. In this context, *Information Dominance*, as a core competency, is on an equal footing with the other core functions of the Air Force: Air Superiority, Space Superiority, Precision Employment and Global Mobility.⁷⁹

To highlight the overarching importance of information dominance, draft AFDD 1 includes *Information* as a tenet of air power:

Information. Aerospace power is no longer just aircraft, missiles, and satellites, but information power as well. Information has always been part of warfare; however, it may now be central to the outcome of a conflict. Commanders have always tried to have better information than the enemy and have tried to interfere with enemy information collection and processing. Today, advanced microchips, communications, and precision weaponry allow the concept of information superiority to be a strategic component of warfare. Many argue that the precise strategic attacks against Iraq's central command and control structures during DESERT STORM made that conflict the first "information war." It advanced the theory that whoever has the best ability to gather, understand, and control information, and deny the same to an opponent, can quickly attain the advantage. Therefore, establishing information dominance over one's adversary is a major focus of most military operations.⁸⁰

This addition of *Information* as a tenet illustrates the impact information operations are expected to have on the conduct of future operations. Coupling information technologies with precision strike provides an entire new vista for the application of air power and is further illustrated in Appendix A, Airmindedness and the Principles of War. Each of the joint principles of war is illustrated based

on applying air power unique capabilities in tandem with superior, or dominant information. Most notable is the explanation of an airman's view of mass—"Today, a single precision weapon can often cause the destructive effect that took hundreds of bombs in the past."⁸¹ Left unstated is the fact that to achieve the desired massed effect, information on The target's exact location is essential.

Information dominance is an objective and a condition in draft AFDD 1. As an objective it is the means for a commander to achieve "faster and more effective command and control."⁸² The ultimate objective of each information mission is to dominate the battlespace which allows the commander freedom of action. It is also a condition—it allows the commander to act faster than his adversary and is "central to the outcome of a conflict."

The Army asserts that "information dominance is neither continuous or assured."⁸³ However, achieving information dominance provides better intelligence, situational awareness, greater agility and the ability to orchestrate combined effects at the tactical level. At the operational level it enhances coordination between the joint services, coalition forces and interagency participants. For all levels of operations it is a force multiplier. Three operations are specifically targeted toward achieving information dominance in draft FM 100-5:

Command and Control Warfare (C²W)—the integrated use of Operations Security, military deception, psychological operations, electronic warfare and physical destruction to deny information, destroy adversary command and control, protect friendly command and control across the range of operations and at all levels of conflict

Civil Affairs—activities that establish, maintain, influence, or exploit relations between military forces, civilian authorities, and the civilian population to facilitate military operations and consolidate operational objectives

Public Affairs—activities that identify critical audiences, messages, and means of communication to inform the American public and target audiences about the capabilities and employment of U.S. Armed Forces

Each of these operations support the objective of achieving information dominance. But the Army also perceives information dominance as a condition.

The total operational environment contains infinite bits of information of which only some is relevant to the accomplishment of the objective. Filtering the relevant information is critical. Draft FM 100-5 explains this filtering process through the cognitive hierarchy. Data must be organized and formatted to become information, which provides situational awareness. Information that is recognized to have value and that can lead to accomplishing an objective or goal leads to knowledge. Applying judgment to that knowledge leads to understanding.⁸⁴ This relationship of data to knowledge highlights the concept that one can have perfect information but still be unsure of how to respond. It illustrates that Inherent at all levels of the cognitive hierarchy is uncertainty and chance. Any tool, activity or resource that mitigates uncertainty and chance helps to establish the condition of information dominance. It is because information dominance is a condition for success that FM 100-5 includes “Gain Information Dominance” in its patterns of operations.

Asymmetric Force Application

Both services define asymmetric engagement as the dissimilar relationship in capability between the object attacked and the attacker. However, the Air Force asserts that asymmetrical engagement is the primary strength of air power while the Army maintains that asymmetry is an effect that is achieved depending on how a commander employs his operating systems.

Among the first to assert the quality of asymmetric aerial attack was Air Marshall Giulio Douhet. "Because of its independence of surface limitations and its superior speed—superior to any other known means of transportation—the airplane is the offensive weapon par excellence."⁸⁵ This sentiment is spelled out again in draft AFDD 1: "The Air Force... provide[s] the nation an economy of force capability to execute national military strategy—primarily through the application of asymmetric force (the leveraging of aerospace power's advantages in time, mass, position, and awareness against an adversary's weaknesses)."⁸⁶ Asymmetry in engagement is the primary means by which the Air Force applies combat power. It is a core competency expressed through precision employment. "Integral to precision employment is the ability to mass force anywhere and attack any facet of the enemy's power."⁸⁷ Asymmetric force application is an integral concept in eight of ten tenets of aerospace power (flexibility, versatility, synergistic, strategic force, concentration, persistent and information).⁸⁸ It is an article of faith to the Air Force, as well as a product of the operating environment, that air power is applied asymmetrically.

Because of the nature of the Army's operating systems and operating environment, asymmetrical attack is a method of achieving an effect on the enemy, just as overmatch is a method of achieving an effect. Asymmetry is caused when "a dissimilar relationship forces an opponent to fight against things for which he has not design or capability," while overmatch is "generating and applying power similar to that of the enemy's at a level and in a manner he cannot match." ⁸⁹

Three concepts were contrasted and examined between draft FM 100-5 and AFDD 1. These three concepts, technological superiority, information dominance, and asymmetric force application are the key components for a revolution in military affairs. Both draft manuals introduce and develop these concepts in anticipation of the change in organization and operational routines the full integration of information storage, processing and distribution technologies, and precision engagement systems will have on future operations. The next section will analyze the Army and Air Force paradigms to determine if draft FM 100-5 and AFDD 1 are compatible and complementary.

IV. ANALYSIS

The Army and the Air Force have different archetypes for applying military power despite agreement on a theory of warfare. Each service is effected by the lens of the medium in which it typically operates, the service culture and history,

and the service's core values. Each service doctrine effected by all of these elements and is therefore expressed differently in the Army and the Air Force. This difference is not necessarily harmful. The history of Army and Air Force doctrine shows that complementary doctrine has been cyclical, going through a periods of indifference to periods of close cooperation. It is during the periods when doctrine was complementary that the military was successful in conflict.

A common perception of a national security threat does not necessarily force close cooperation between the Army and the Air Force. During the 1950s the primary perceived threat to the United States was nuclear attack from the Soviet Union. As previously shown, basic Army and Air Force doctrine was not synchronized during this period. Similarly, constrained Department of Defense budgets do not drive a wedge between Army and Air Force doctrinal statements. The military budget was severely constrained in the 1970s, yet this was the period in which AirLand Battle Doctrine germinated. Rather, complementary doctrine is a result of convergence of the two services' paradigm of the world.

The Army Paradigm

An organization's vision is driven by the environment and function it is assigned. The Army approaches its mission from the position that "Wars are won on the ground. Only the Army can dominate the land, its populace and other resources."⁹⁰ Since people live on land, the Army rightfully views its capability to dominate the land as decisive in conflict. This view also engenders reflection on the domain of conflict. Draft FM 100-5 entrusts Army forces with

missions extending from combat operations, both offensive and defensive, to stability and support operations.⁹¹ Each of these levels of conflict requires specific expertise in applying a variety of means to eliminate the source of conflict—whether those means are providing purified water to refugees or engaging and destroying an enemy force,

This charge forces the Army to think about conflict on a holistic level. Conflict is a human endeavor—its sources can be physical or sociological. To understand the means available to the soldier to effect this environment of conflict, draft FM 100-5 provides a construct for conceptualizing the various realms of human activity embodied in the physical, moral and informational domains of conflict. This construct forces the soldier to view the world as it relates to man.

Technology is viewed as a means through which a soldier accomplishes his assigned task and enables a soldier to operate more efficiently and effectively. Information technologies, in particular, are singled out and viewed as a central component for conducting operations more efficiently and with greater effect from the effort applied. In fact, information technologies allow exploitation of enemy information systems and make that information a weapon in its own right.⁹²

To explain the concept of information as a weapon, draft FM 100-5 explains the cognitive hierarchy in which information is merely bits of data in a useful format. Information provides situational awareness, but requires application to some purpose to be useful. Without this cognition, information is

merely additional noise one must sort through. The sorting of information can be an automated process (signal processing), but cognition occurs in the individual. Positively effecting one's own cognition, while negatively effecting an adversary's cognition is the essence of information dominance.⁹³ Information dominance is an objective of military operations to insure the required situational awareness of one's own forces. It is also a condition for successful operations since it is required to maintain coordinated operations.

The purpose and nature of an operation helps a commander determine what action and what combination of core functions most effectively accomplishes a task.⁹⁴ His starting point is the situational awareness provided by information dominance. The construct of the conflict domain, the cognitive hierarchy and Army core functions (see, shape, strike, shield and move), provides a commander numerous options to "shatter an enemy's coherence and force him to yield or be destroyed."⁹⁵ Asymmetric force application is just one of those options. It can be applied within a single domain of conflict, such as destroying an air defense site with a tank in the physical domain of conflict, or force can be applied across domains. For example, dropping amnesty leaflets to a partially defeated opponent is using the information domain to effect the moral domain of conflict.

The Army's doctrinal construct for viewing the world insures that soldiers acknowledge chance and friction. Technology merely provides a more efficient or more effective means through which to accomplish a task. The cognitive hierarchy demonstrates that information dominance is transient. It requires

cognition and intent for a soldier to act upon. Asymmetric force application is simply a means of striking the enemy.

The Air Force Paradigm

Just like the Army, the Air Force's vision of its place in national defense is driven by its operational environment. Aerospace operations are continuous and enduring when one considers the space communication and surveillance missions. This enduring quality prompts doctrinal statements such as "Aerospace power has changed the ways that wars are fought and the manner in which the United States pursues peacetime efforts to expand its influence. Furthermore, aerospace power is the great enabler that allows all Services to optimize their contributions to America's national security."⁹⁶ This sentiment leads to the Air Force vision of dominating air and space and shaping the operational environment for operations conducted by the other Services.

It accomplishes these tasks by applying technological solutions to the problem of operating in an environment that is naturally unsuited for man. "Man has been able to fight with their hands or simple implements and to sail on water using wind or muscle power for a millennia, but to achieve flight required advanced technology."⁹⁷ To be successful in employing air assets, one must first be able to conquer the physical constraints of gravity. The nature of the medium in which the Air Force operates forces it to consider the physical above all other realms of human consciousness. For this reason, the Air Force asserts that technology is a tenet of air power. Technology allows airmen to operate in,

and master the physical environment. From this perspective, technology is the driving factor of military capability.

Similarly, it is technology that provides modern aircraft and space systems signal processing systems which provide feedback (or information) to the operator on the status of power systems, position, attitude and direction of movement. This information is integral to flight and its exploitation integral to air warfare. The revolution in computer and signal processing systems provided additional means through which an air component commander could centrally control his forces. This additional capability strengthened a basic tenet of air power theory—centralized control.⁹⁸ It is centralized control of aerospace assets that allows an air component commander the flexibility to mass his assets at critical points in time.

This ability to mass assets provides air power the means to shape the battlespace for each of the other Services. It is accomplished two ways: through information dominance, and asymmetric force application. The Air Force defines asymmetric force as “the leveraging of aerospace power’s advantages in time, mass, position and awareness against an adversary’s weakness.”⁹⁹ Precision employment, an Air Force core competency, makes asymmetrical engagements more potent by delivering force at the precise point that will achieve the greatest effect.¹⁰⁰ Precision employment is the possible because of technological advances and information dominance.

Consonance Between Doctrine

The Army and the Air Force share a similar outlook on the purpose of doctrine, the nature of future conflict, and the role of each service in a future conflict. The framework each Service develops for analyzing the effects it can bring to bear to resolve conflict are not divergent. Rather, each reinforces the vision of the other. Draft FM 100-5 retains an operational focus which is in consonance with the focus of draft AFDD 1. The perspective from which the Army and Air Force develop doctrine is markedly effected by the operating medium—land or air combat, however the concept of employing decisive force—whether that force is firepower, presence, or information—at the correct point in space and time is clear in each manual.

V. CONCLUSION

The Army and the Air Force are anticipating a revolution in military affairs (RMA) glimpsed during the 1991 Persian Gulf War. This RMA is made possible by emerging information technologies and precision employment of military capabilities. Both are attempting to advance doctrine that will bridge present capability with the anticipated capability envisioned as a result of information dominance. As well, both the Army and Air Force are fully aware that the immediate future is one of change and uncertainty which requires careful

planning and preparation. Therefore, changes in doctrine are not radical, but incremental.

Much has changed in Army and Air Force doctrine. However, basic and enduring doctrinal concepts remain in each publication. The Army retains the tenets of Army operations as characteristics of Army operations: initiative, agility, depth, orchestration (which includes synchronization, a characteristic in the 1993 FM 100-5), and versatility. In similar fashion, the Air Force retains the tenets of air power with only slight modification. Each manual emphasizes the imperative to dominate the medium in which forces engage in conflict. In draft FM 100-5, "Collapse of the enemy's will constitutes dominance. Physical destruction of an enemy—real or threatened—is merely the means by which we generate collapse."¹⁰¹ In draft AFDD 1, "Just as applicable today as in World War II, the theater commander must subordinate—to the extent required—all other air operations to the goal of air superiority. The weight of enemy surface attacks may tempt the theater commander to throw everything into supporting friendly surface forces without first gaining control of the air. Relaxing pressure on the enemy's air forces may allow them to gain air superiority with disastrous results."¹⁰² These statements are fundamental concepts for each service. The Army dominates the land, while the Air Force dominates the air. Both services operate throughout the land, air and space mediums to support theater commander's requirements. Complementary doctrine insures the commander is supported efficiently and effectively.

This paper began by stressing that Army and Air Force operational doctrine should complement each other. To determine if draft FM 100-5 and AFDD 1 were complementary with respect to technological superiority, information dominance and asymmetric force application, three questions were answered. Does doctrine mean the same thing to the Army and the Air Force? It does. Should Army and Air Force doctrine be complementary? History shows that when doctrine was complementary and cooperative, operations involving military force were efficiently accomplished and successful. Finally, does the Army and the Air Force have a similar understanding of technological superiority, information dominance, and asymmetric force application? They do have the same understanding, however, the Army views technology as an enabling factor for military operations while the Air Force views technology as the driving factor for military capability. Both services understand information dominance as both an objective and a condition and both services see asymmetric engagement as the dissimilar relationship in capability between the object attacked and the attacker. However, the Air Force sees asymmetrical engagement as the primary strength of air power while the Army maintains that asymmetry is an effect that is achieved depending on how a commander employs his operating systems.

NOTES

¹ Coordinating Draft, FM 100-5, *Operations*. (Fort Leavenworth KS: FM 100-5 committee, as of 14 Jan 1997), I-1-1.

² 2nd Draft, Air Force Doctrine Document 1 (Draft AFDD 1), *Air Force Basic Doctrine*. Washington, DC: HQ United States Air Force, AF/XOX, 21 May 1996. 1.

³ Field Marshall Viscount William Joseph Slim, *Defeat Into Victory*, (Hong Kong: Cassell and Company, Limited, 1972), 546.

⁴ James F. Dunnigan and Raymond M. Macedonia, *Getting It Right, American Military Reforms After Viet Nam to the Gulf War and Beyond* (New York: William Morrow & Co., 1993), 208 through 209, 278 through 279. Dunnigan and Macedonia list four items that did not go as well as expected during the 1991 Gulf War for the Army and the Air Force. These were 1) The Army was ill equipped to fight a large scale armor battle in the desert because of limited transportation assets, 2) Doctrine and tactics for large unit operations was lacking, 3) Air Force and Army operations were not as well coordinated as they should have been, 4) Some highly valued systems did not work as well as expected, notably DPICM (Dual Purpose, Improved Conventional Munitions). They also state that the 1992 AFM1-1 and 1993 FM 100-5 incorporated numerous lessons learned from the Gulf War.

⁵ Colonel Jeffery R. Barnett, USAF, *Future War, An Assessment of Aerospace Campaigns in 2010*, (Maxwell AFB, AL: Air University Press, 1996), 15. Colonel Barnett's thesis is that four key concepts will cause the next revolution in military affairs (RMA): Information, command and control, penetration, and precision. Colonel Barnett is one of many military officers that believe the U.S. is experiencing an RMA. TRADOC Pamphlet 525-5, *Force XXI Operations*, also anticipates an RMA based on similar concepts.

⁶ The designation FM 100-5 was first used in 1905 for the U.S. Army Field Manual on Operations. Coordinating Draft, FM 100-5, *Operations*. Fort Leavenworth KS: FM 100-5 committee, as of 14 Jan 1997, i.

⁷ Robert Frank Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II* (Montgomery, AL: Air University Press, Maxwell AFB, Dec 1989), 715-16. Prior to AFM 1-1, basic operational doctrine for the USAF was incorporated in the AFM 1-2 series regulations which was subdivided by specific mission type.

⁸ Donald Rice, *Global Reach, Global Power* (1992).

⁹ Department of the Army, *Army Focus 94, Force XXI, America's Army In the 21st Century* (September 1994), 11.

¹⁰ Ibid., 29.

¹¹ TRADOC Pamphlet 525-5, *Force XXI Operations*, 3-10.

¹² Department of the Air Force, *Global Presence* (1995), 6-14.

¹³ Office of the Chairman, Joint Chiefs of Staff, *Joint Vision 2010* (1996).

¹⁴ The Air Force recognizes three levels of aerospace doctrine: basic, operational and tactical. Basic doctrine is "the most fundamental and enduring beliefs which describe and guide the proper use of air and space forces in military action." Operational doctrine applies the basic doctrine to distinct objectives, force capabilities, broad mission areas, and operational environments. "Operational doctrine describes the organization of air and space forces, and it anticipates changes and influences which may affect military operations, such as technological advances." Draft AFDD-1, 36 through 37.

¹⁵ Carl Von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 596.

¹⁶ *Roots of Strategy, Book 2* (Harrisburg, PA: Stackpole Books, 1987), 461.

¹⁷ Coordinating draft FM 100-5, I-1-5; and Jun 1993 FM 100-5, 1-1 through 1-2.

¹⁸ FM 100-5, 1-1 through 1-2.

¹⁹ Draft AFDD-1, v through vi.

²⁰ Mar 1992 AFM 1-1, vii.

²¹ The 1986 Goldwater-Nichols Department of Defense Reorganization Act consolidated the powers of the theater combatant commanders and centralized authority within the Department of Defense with the Secretary of Defense. Douglas C. Lovelace, Jr., *Unification of the United States Armed Forces: Implementing the 1986 Department of Defense Reorganization Act* (Carlisle Barracks, PA: Strategic Studies Institute, August 6, 1996), 59.

²² Robert Frank Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume I* (Montgomery, AL: Air University Press, Maxwell AFB, 1971), 138.

²³ Ibid., 191-196.

²⁴ Ibid., 365-400.

²⁵ Ibid., 191.

²⁶ Ibid., 384-393.

²⁷ Dunnigan and Macedonia, 57.

²⁸ AFM 1-2, *United States Air Force Basic Doctrine* (Washington, D.C.: Department of the Air Force, 1 Apr 1955; reprint, Washington D.C.: *Air Force Magazine*, Jan 1956), 74 (page citations are to the reprint edition). Pp. 72-76.

²⁹ Ibid., 73.

³⁰ A.J. Bacevich, *The Pentomic Army, The U.S. Army Between Korea and Viet Nam* (Washington, D.C.: National Defense University Press, July 1986), 49-70.

³¹ Dunnigan and Macedonia, 50-59.

³² Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II*, 228-235.

³³ Ibid., 287.

³⁴ Dunnigan and Macedonia, 73-74.

³⁵ Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II*, 729-730.

³⁶ Major Paul H. Herbert, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations* (Fort Leavenworth, KS: Combat Studies Institute, 1988), 7.

³⁷ Ibid., 88.

³⁸ Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II*, 539-542.

³⁹ Dunnigan and Macedonia, p. 168.

⁴⁰ Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II*, 553-555. The 31 initiatives were (1) area surface-to-air missiles/air defense fighters, (2) point air defense, (3) countering heliborne threats, (4) tactical missile threats, (5) identification, friend or foe (IFF) systems, (6) rear area operations centers, (7) host nations support security equipment, (8) air base ground defense, (9) air base ground defense flight training, (10) rear area close air support, (11) mobile weapon systems, (12) ground-based electronic combat against enemy air attacks, (13) airborne radar jamming systems, (14) the precision location strike system (PLSS), (15) joint suppression of enemy air defenses (J-SEAD), (16) combat search and rescue, (17) rotary-wing support for special operations forces (SOF), (18) a joint tactical missile system, (19) Army and Air Force munitions RDT&E, (20) night combat, (21) battlefield air interdiction, (22) a joint target set, (23) theater air interdiction systems, (24) close air support, (25) air liaison officers and forward air controllers, (26) manned aircraft systems, (27) a joint surveillance and target attack radar system (J-STARS), (28) the TR-1 (U-2) program, (29) manned tactical reconnaissance systems, (30) intratheater airlift, (31) cross-service participation sister service programs essential to the joint conduct of air-land combat operations.

⁴¹ Dunnigan and Macedonia, 168.

⁴² Futrell, *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II*, 744.

⁴³ Dunnigan and Macedonia, 209-210

⁴⁴ Mar 1992 AFM 1-1, 10.

⁴⁵ June 1993 FM 100-5, vi.

⁴⁶ Draft FM 100-5, 1-2-4.

⁴⁷ Ibid., p. 1-2-1.

⁴⁸ Ibid., 1-2-3.

⁴⁹ Draft AFDD-1, 6.

⁵⁰ Ibid., 1-2-6 through 1-2-9.

⁵¹ Ibid., 4.

⁵² Ibid., 7.

⁵³ Clausewitz postulates that "war [is] a paradoxical trinity—composed of primordial violence, hatred, and enmity, which are to be regarded as a blind natural force; of the play of chance and probability with which the creative spirit is free to roam; and of its element of subordination, as an instrument of policy, which makes it subject to reason alone." Carl Von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 89. The Air Force in draft AFDD-1 cites these three points in its discussion on the Fundamental Nature of War. Draft AFDD 1, .5.

⁵⁴ Ibid.

⁵⁵ AFDD-1 states, "War is a clash of opposing wills... While physical factors are crucial in war, the moral factor—the will—usually decides the issue.", 5.

⁵⁶ Ibid., 43.

⁵⁷ The Air Force proposes this joint definition of battlespace in draft AFDD 1: "The commander's conceptual view of the area and factors which he must understand to successfully apply combat power, protect the force, and complete the mission. It encompasses all applicable aspects of air, sea, space and land operations that the commander must consider in planning and executing military operations. The battlespace dimensions can change over time as the mission expands or contracts according to operational objectives and force composition. Battlespace provides the commander a mental forum for analyzing and selecting courses of action for employing military forces in relationship to time, tempo, and depth." 41.

⁵⁸ Ibid., 4.

⁵⁹ Draft FM 100-5, I-2-11 through I-2-12.

⁶⁰ Ibid., 11.

⁶¹ William Morris, Ed., *American Heritage Dictionary*, (Boston, MA: Houghton Mifflin Company, 1976), 1321.

⁶² Draft AFDD 1, p. 3.

⁶³ Meilinger, Philip S., Colonel, USAF, *10 Propositions Regarding Air Power*, (Montgomery, AL: Air University Press, Maxwell AFB, February 1975), 57. Colonel Meilinger 10 propositions are (1) Whoever controls the air generally controls the surface, (2) Air power is an inherently strategic force, (3) Air power is primarily an offensive weapon, (4) In essence, air power is targeting, targeting is intelligence, and intelligence is analyzing the effects of air operations, (5) Air power produces physical shock by dominating the fourth dimension—time, (6) Air power can conduct parallel operations at all levels of war, simultaneously, (7) Precision air weapons have redefined the meaning of mass, (8) Air power's unique characteristics necessitate that it be centrally controlled by airmen, (9) Technology and air power are integrally and synergistically related, (10) Air power includes not only military assets, but an aerospace industry and commercial aviation.

⁶⁴ Draft AFDD-1, 3 through 4.

⁶⁵ Draft FM 100-5, I-1-4.

⁶⁶ Ibid., III-1.

⁶⁷ Ibid., I-2-7.

⁶⁸ TRADOC Pamphlet 525-5, *Force XXI Operations*, 3-24.

⁶⁹ Draft FM 100-5, I-2-8.

⁷⁰ Ibid., II-3-3.

⁷¹ Ibid., II-4-3.

⁷² TRADOC Pamphlet 525-5, *Force XXI Operations*, 1-5.

⁷³ Draft FM 100-5, I-2-11 through 12.

⁷⁴ The Air Force proposes this joint definition of battlespace in draft AFDD 1: "The commander's conceptual view of the area and factors which he must understand to successfully apply combat power, protect the force, and complete the mission. It encompasses all applicable aspects of air, sea, space and land operations that the commander must consider in planning and executing military operations. The battlespace dimensions can change over time as the mission expands or contracts according to operational objectives and force composition. Battlespace provides the commander a mental forum for analyzing and selecting courses of action for employing military forces in relationship to time, tempo, and depth." (p.41). Draft FM 100-5 defines battlespace as: "a comprehensive,

conceptual view of the operational environment and all factors that influence the success of a military operation. Battlespace extends beyond the traditional notions of width, depth and height. It includes portions of the electro-magnetic spectrum, as well as dimension of time. It also incorporates human considerations: not only soldiers, but also civilians—indigenous peoples in the area of operations, and citizens and families in the United States.” (III-2-13).

⁷⁵ Draft AFDD 1, 13.

⁷⁶ Draft FM 100-5, V-3-7.

⁷⁷ The 1993 FM 100-5 discusses information management and dissemination under Combat Functions, Intelligence (p. 2-12). The 1993 edition AFM 1-1 does not address information management and dissemination. Rather it focuses on the on the Roles and Missions of Force Enhancement forces, which include airlift, aerial refueling, spacelift, electronic combat assets in addition to surveillance and reconnaissance assets (6 through 7).

⁷⁸ Draft AFDD 1, 13.

⁷⁹ Aerospace Roles and Missions as described in 1993 AFM 1-1 are Aerospace control, Force Application, Force Enhancement, and Force Support (pp. 6 through 7). Draft AFDD 1 discusses core competencies with reference to pillars supporting the vision of Global Reach, Global Power which provides Power Projection. The pillars are supported at the base by Readiness & Sustainment (10 through 14).

⁸⁰ The ten tenets of air power are Flexibility, Versatility, Synergistic, Centralized Command, Offensive employment, Strategic Force, Technology Related, Concentration, Persistent, and Information (draft AFDD 1, 2 through 4). The 1992 edition AFM 1-1 lists seven tenets: Centralized Control/Decentralized Execution, Flexibility/Versatility, Priority, Synergy, Balance, Concentration, and Persistence (AFM 1-1, 7 through 8). Offensive employment, Strategic Force, Technology Related, and Information are new tenets, while Balance and Priority were deleted.

⁸¹ The principles of war: objective, offensive, mass, maneuver, economy of force, unity of command, security, surprise, and simplicity, are all illustrated with respect to what the Air Force provides to the theater commander. Each principle is illustrated with an example of a type mission that is in concert with Air Force core competencies that either provide information or consume require information. Draft AFDD 1, 31.

⁸² Draft AFDD 1, 13.

⁸³ Draft FM 100-5, V-3-7.

⁸⁴ Ibid., V-3-4 through V-3-5.

⁸⁵ Giulio Douhet, *Command of the Air*, general editors Richard H. Kohn and Joseph P. Harahan, translated by Dino Ferrari (New York: Coward McCann, Inc., 1942; Office of Air Force History, Washington D.C., 1983), 15.

⁸⁶ Draft AFDD 1, 10.

⁸⁷ Ibid., 12.

⁸⁸ Ibid., 2 through 4.

⁸⁹ Draft FM 100-5, II-1-5.

⁹⁰ Draft FM 100-5, I-1-1.

⁹¹ Ibid., Part Four discusses Conduct of Operations which are broken down into four subcategories: Offensive operations, Defensive operations, Stability operations, and Support operations.

⁹² Ibid., V-3-1.

⁹³ Ibid., V-3-4 - V-3-7.

⁹⁴ Ibid., II-4-2.

⁹⁵ Ibid., II-4-11.

⁹⁶ Draft AFDD 1, 1.

⁹⁷ Draft AFDD 1, 3.

⁹⁸ Ibid., 2

⁹⁹ Ibid., 10.

¹⁰⁰ Precision employment is the ability to employ forces to cause strategic or operational effects or the employment of forces to affect an event across the range of military options. Draft AFDD 1, 12.

¹⁰¹ Draft FM 100-5, II-1-2.

¹⁰² Draft AFDD 1, 11.

BIBLIOGRAPHY

Books

- Bacevich, A.J. *The Pentomic Army, The U.S. Army Between Korea and Viet Nam*. Washington, D.C.: National Defense University Press, July 1986.
- Barnett, Colonel Jeffery R., USAF, *Future War, An Assessment of Aerospace Campaigns in 2010*. Maxwell AFB, AL: Air University Press, 1996.
- Clausewitz, Carl von. *On War*. Edited and translated by Peter Paret and Michael Howard. Princeton, NJ: Princeton University Press, 1984.
- Douhet, Giulio. *The Command of the Air*. Translated by Dino Ferrari. New York, NY: Coward-McCann Inc., 1942. New imprint, Washington DC: Office of Air Force History, 1983.
- Dunnigan, James F. and Macedonia, Raymond M. *Getting It Right, American Military Reforms After Viet Nam to the Gulf War and Beyond*. New York: William Morrow & Co., 1993.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume I*. Montgomery, AL: Air University Press, Maxwell AFB, 1971.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine, Basic Thinking in the United States Air Force, 1961-1984, Volume II*. Montgomery, AL: Air University Press, Maxwell AFB, Dec 1989.
- Herbert, Major Paul H. *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*. Fort Leavenworth, KS: Combat Studies Institute, 1988.
- Lovelace, Douglas C. Jr. *Unification of the United States Armed Forces: Implementing the 1986 Department of Defense Reorganization Act*. Carlisle Barracks, PA: Strategic Studies Institute, August 6, 1996.
- Meilinger, Philip S., Colonel, USAF, *10 Propositions Regarding Air Power*. Montgomery, AL: Air University Press, Maxwell AFB, February 1975.
- Morris, William Ed. *American Heritage Dictionary*. Boston, MA: Houghton Mifflin Company, 1976.
- Roots of Strategy, Book 2*. Harrisburg, PA: Stackpole Books, 1987.

Slim, Field Marshall Viscount William Joseph, *Defeat Into Victory*. Hong Kong: Cassell & Company Limited, 1956.

Documents

Department of the Air Force, *Global Presence*. 1995.

Department of the Army, *Army Focus 94, Force XXI, America's Army In the 21st Century*. September 1994.

Office of the Chairman, Joint Chiefs of Staff, *Joint Vision 2010*. 1996.

Rice, Donald *Global Reach, Global Power*. 1992.

Manuals and Publications

Joint Pub 1, *Joint Warfare of the Armed Forces of the United States*. Washington, D.C.: The Joint Staff, 10 January 1995.

Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*. Washington, D.C.: The Joint Staff, 23 March 1994.

Joint Pub 3-0, *Doctrine for Joint Operations*. Washington D.C.: The Joint Staff, 1 February 1995.

FM 100-5, *Operations*. Washington, D.C.: Headquarters, Department of the Army, 14 Jun 1993.

Coordinating Draft, FM 100-5, *Operations*. Fort Leavenworth KS: FM 100-5 committee, as of 14 Jan 1997.

AFM 1-1, *Basic Aerospace Doctrine of the United States Air Force*. Washington D.C.: Headquarters, Department of the Air Force, March 1992.

AFM 1-2, *United States Air Force Basic Doctrine*. Washington, D.C.: Department of the Air Force, 1 Apr 1955; reprint, Washington D.C.: *Air Force Magazine*, Jan 1956. 72-76.

2nd Draft, Air Force Doctrine Document 1, *Air Force Basic Doctrine*. Washington, DC: HQ United States Air Force, AF/XOX, 21 May 1996.

TRADOC Pamphlet 525-5, *Force XXI Operations*. Fort Monroe, VA:
Headquarters, United States Army Training and Doctrine Command,
1 August 1994